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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/633,557 | 08/05/2003 | Kaoru Sato | 43890-618 | 7144 |

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MCDERMOTT, WILL & EMERY
600 13th Street, N.W.
WASHINGTON, DC 20005-3096

| EXAMINER |
|---|
| LEO, LEONARD R |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3744 | |

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/633,557 | SATO ET AL. | |
| | Examiner | Art Unit | |
| | Leonard R. Leo | 3744 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *28 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,2,4,5,7-9,15-17,19-22,24,25,27,28 and 30-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,5,7-9,15-17,19-22,24,25,27,28 and 30-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

This application is a Division of serial no. 09/493,677, still pending. Claims 6, 23, 26 and 29 are cancelled, and claims 1-2, 4-5, 7-9, 15-17, 19-22, 24-25, 27-28 and 30-34 are pending.

### *Claim Objections*

Applicant is advised that should claim 4 be found allowable, claim 8 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The originally filed specification does not provide an adequate written description of the invention. There is no basis for "the heat receiving face protrudes further outwards than said pillar-type protrusions." It is noted the claim was amended in a preliminary amendment.

***Drawings***

Figures 12A through 14B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "the heat receiving face protrudes further outwards than said pillar-type protrusions" in claim 9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-2, 5, 7, 15-17, 19-21, 24-25, 28 and 30-34 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 11 of U.S. Patent No. 6,397,926 in view of Kuno et al (JP 04-294570).

The patent claims all the claimed limitations of the application except protrusions parallel to the heat receiving face.

Kuno et al discloses a heat sink comprising a column 3 and a plurality of protrusions 4 extending parallel with respect to the heat receiving face for the purpose of achieving a desired heat exchange.

Since the patent and Kuno et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Kuno et al would have been recognized in the pertinent art of the patent.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in the patent protrusions extending parallel with respect to the heat receiving face for the purpose of achieving a desired heat exchange as recognized by Kuno et al.

Regarding claims 5, 17 and 31, Kuno et al discloses the heat receiving face is spaced from the nearest protrusion.

Regarding claims 7 and 34, the first and second slits are formed on the face of the column. Therefore, the formed protrusions are at the same height of the column.

Claims 4, 8 and 27 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 11 of U.S. Patent No. 6,397,926 in view of Kuno et al (JP 04-294570) as applied to claims 1-2, 5, 7, 15-17, 19-21, 24-25, 28 and 30-34 above, and further in view of Schultz.

The combined teachings of the patent claims and Kuno et al lacks protrusions and/or recesses on the pillar-type protrusions.

Schultz discloses a heat sink comprising a plurality of fins 18, 20 having a plurality of protrusions and ridges 40, 40', 40" for the purpose of improving heat exchange by increasing the surface area and causing turbulence.

Since the patent and Schultz are both from the same field of endeavor and/or analogous art, the purpose disclosed by Schultz would have been recognized in the pertinent art of the patent.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in the patent protrusions and ridges for the purpose of improving heat exchange by increasing the surface area and causing turbulence as recognized by Schultz.

Claim 22 is are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 11 of U.S. Patent No. 6,397,926 in view of Kuno et al (JP 04-294570) as applied to claims 1-2, 5, 7, 15-17, 19-21, 24-25, 28 and 30-34 above, and further in view of Arnold et al or Higgins, III.

The combined teachings of the patent claims and Kuno et al lacks the column having a curved face.

Arnold et al (Figure 7) discloses a heat sink comprising a plurality of fins 20 disposed on a column having a curved surface 30 for the purpose of improving heat exchange by minimizing the dead space and streamlining the flow.

Higgins, III (Figure 4) discloses a heat sink comprising a plurality of fins 54 disposed on a column 50 having a curved surface 53 for the purpose of improving heat exchange by minimizing the dead space and streamlining the flow.

Since the patent and Arnold et al or Higgins, III are both from the same field of endeavor and/or analogous art, the purpose disclosed by Arnold et al or Higgins, III would have been recognized in the pertinent art of the patent.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in the patent a column having a curved surface for the purpose of improving heat exchange by minimizing the dead space and streamlining the flow as recognized by Arnold et al or Higgins, III.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 5, 7, 9, 22, 25, 28 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuno et al in view of Arnold et al.

Kuno et al (Figures 1-2) discloses all the claimed limitations the column having a curved face.

Arnold et al (Figure 7) discloses a heat sink comprising a plurality of fins 20 disposed on a column having a curved surface 30 for the purpose of improving heat exchange by minimizing the dead space and streamlining the flow.

Since Kuno et al and Arnold et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Arnold et al would have been recognized in the pertinent art of Kuno et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Kuno et al a column having a curved surface for the purpose of improving heat exchange by minimizing the dead space and streamlining the flow as recognized by Arnold et al.

The "whereby" clause does not set forth any structural limitation. The clause recites "a cooler can be provided" which is not a positive recitation of structure. The recitation is read as "a cooler ***may or may not*** be provided."

Regarding claim 7, Figure 1 of Kuno et al disclsoes the fins 4 doe not go beyond the height of the column 3.

Regarding claim 9, Figure 2 of Kuno et al discloses the heat receiving face 3c extends beyond the fins 4.

Claims 1-2, 5, 7, 9, 15-17, 19-22, 24-25, 28 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuno et al in view of Higgins, III.

Kuno et al (Figures 1-2) discloses all the claimed limitations the column having a curved face.

Higgins, III (Figure 4) discloses a heat sink comprising a plurality of fins 54 disposed on a column 50 having a curved surface 53 for the purpose of improving heat exchange by minimizing the dead space and streamlining the flow.

Since Kuno et al and Higgins, III are both from the same field of endeavor and/or analogous art, the purpose disclosed by Higgins, III would have been recognized in the pertinent art of Kuno et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Kuno et al a column having a curved surface for the purpose of improving heat exchange by minimizing the dead space and streamlining the flow as recognized by Higgins, III.

The "whereby" clause does not set forth any structural limitation. The clause recites "a cooler can be provided" which is not a positive recitation of structure. The recitation is read as "a cooler ***may or may not*** be provided."

Regarding claim 7, Figure 1 of Kuno et al disclsoes the fins 4 doe not go beyond the height of the column 3.

Regarding claim 9, Figure 2 of Kuno et al discloses the heat receiving face 3c extends beyond the fins 4.

Claims 4, 8 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuno et al in view of Arnold et al as applied to claims 1-2, 5, 7, 9, 22, 25, 28 and 30-32 above or Kuno et al in view of Higgins, III as applied to claims 1-2, 5, 7, 9, 15-17, 19-22, 24-25, 28 and 30-33 above and further in view of Schultz, as applied above in the double patenting rejection.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuno et al in view of Arnold et al as applied to claims 1-2, 5, 7, 9, 22, 25, 28 and 30-32 above or Kuno et al in view of Higgins, III as applied to claims 1-2, 5, 7, 9, 15-17, 19-22, 24-25, 28 and 30-33 above and further in view of Schultz, as applied above in the double patenting rejection.

## *Response to Arguments*

The objection to claims 6-8, 23 and 26 is withdrawn in view of the claim cancellations and amendments.

The anticipatory rejection of claim 29 in view of Jordan et al and Kuno et al is withdrawn in view of the claim cancellation.

The terminal disclaimer filed on July 28, 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6,397,926 has been reviewed and was not accepted. The Examiner regrets the omission of the patent number in the Office action, and thus, the patent number in the terminal disclaimer was unable to match the Office action double patenting rejection. Resubmission of the terminal disclaimer will be accepted.

Applicant's arguments have been fully considered but they are not persuasive.

To reiterate the Examiner's position, Figures 1-2 of Kuno et al disclsoes a column 3 having a heat receiving face 3c and a plurality of pillar-type protrusions/fins 4 extending parallel to the heat receiving face 3c. As taught by the secondary reference of Arnold or Higgins, III, the column would be modified to have a curved surface (i.e. in a direction perpendicular to the heat receiving face) for the purpose of improving heat exchange by minimizing the dead space and streamlining the flow. Arnold or Higgins, III disclose airflow from the top of the heat sink.

No further comments are deemed necessary at this time.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is (571) 272-4916. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LEONARD R. LEO
PRIMARY EXAMINER
ART UNIT 3744

October 14, 2006